KONGSBERG

NASAMS
AIR DEFENCE SYSTEM

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Worldwide Operations

KONGSBERG is an international corporation with strong Norwegian roots. Collaboration with our customers, partners and suppliers, and a commitment to understand the context where our technology is applied, are important driving forces behind the corporation's international development and growth.

Support in the Extreme

KONGSBERG contributes to improved safety, security and performance in demanding and complex missions. We achieve this through an in-depth knowledge of our customer's objectives and the needs of the operator, and by meeting their challenges with the right systems, services and technological solutions.

WORLD CLASS

- through people, technology and dedication

The AMRAAM Extended Range expands the NASAMS engagement envelope

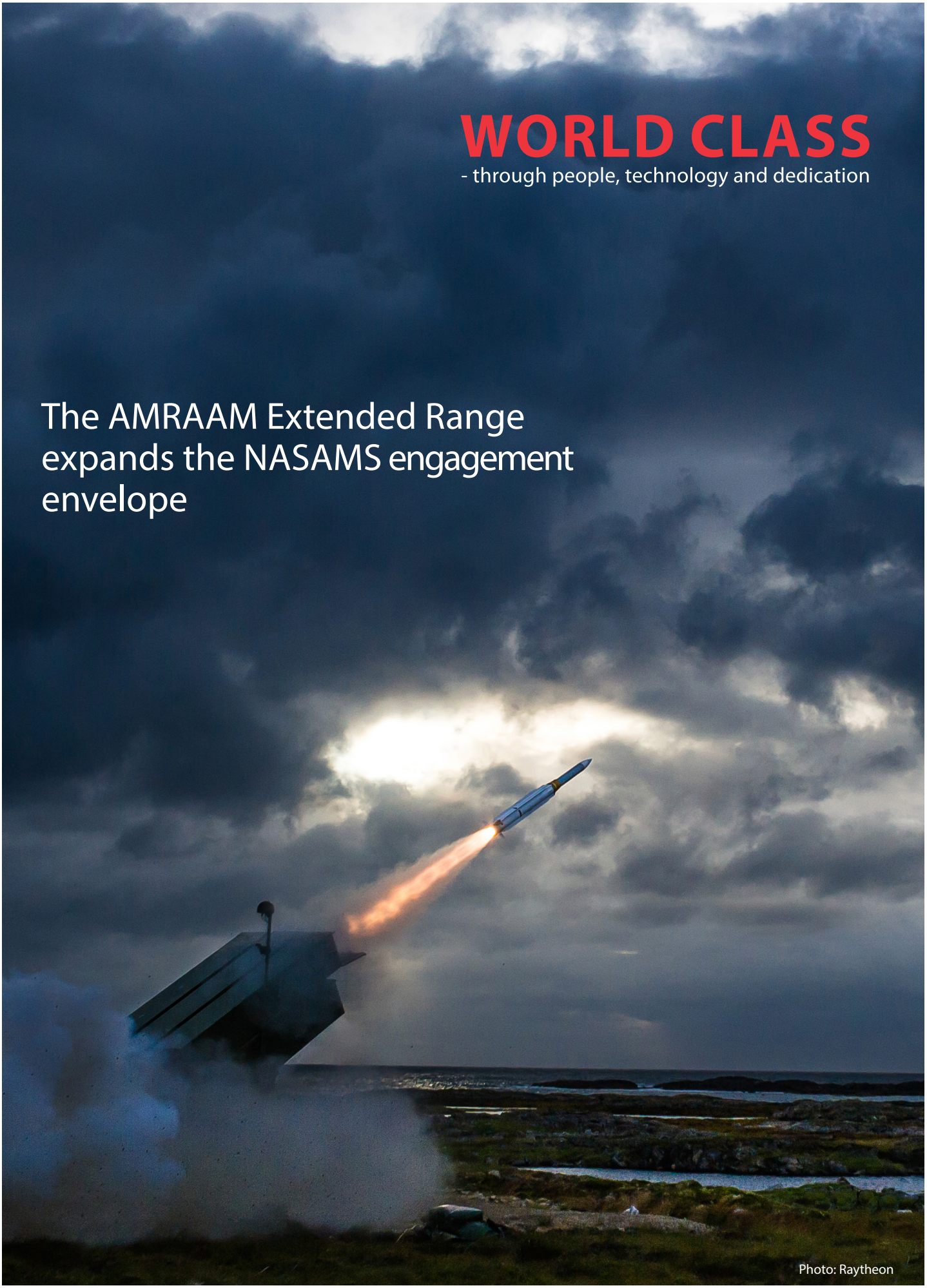


Photo: Raytheon

NASAMS

NASAMS (National Advanced Surface-to-Air Missile System) is the world's first operational Network Centric Short to Medium Range Ground Based Air Defence System.

Unique features

NASAMS features net centric architecture, multiple simultaneous engagements and Beyond Visual Range (BVR) capabilities, closely integrated and adapted to a country's adjacent weapons and command and control systems. The NASAMS network expands the defended area and enhances the total fighting capability of the armed forces.

NASAMS has since the introduction in Norway been on a path of continuous evolution. The current NASAMS customer base consists of thirteen (13) countries, including five NATO and/or EU members.

A total of sixteen (16) nations have acquired the KONGSBERG command and control solution adapted to their requirements.

The most recent capabilities, demonstrating NASAMS path of evolution, are the AMRAAM Extended Range missile (AMRAAM ER) and the AIM-9X-2. AMRAAM ER significantly extends the engagement volume of NASAMS, while the AIM-9X-2 is optimized for shorter ranges. Adding multiple missiles proves the flexibility of the architecture and the ability to introduce new capabilities to counter current and future threats.

The System

A standard NASAMS unit has a modular design comprised of a 5th generation C2 and Fire Control element - the Fire Distribution Center (FDC), an active 3D radar AN/MPQ-64F1 Sentinel, a passive electro-optical and infrared sensor system and a number of missile canister launchers with system missiles.

Normally, a number of NASAMS fire units are netted together in a uniquely designed "hard-real-time" communication network to ensure minimum latency over large distances for maximum system performance utilizing the unique capabilities of the AMRAAM missile.

Flexible mission configuration

NASAMS is by nature a highly mobile system designed with focus on operational flexibility for protection of Air Bases, Sea Ports, Populated Areas, Critical Infrastructure, other High Value Assets and mobile Army Forces. NASAMS has proven interoperability with Higher Echelon Units (HEU) and longer range systems, such as Patriot. The modular design permits mission oriented task force organization of NASAMS, allowing the operators to maximize the effect of the components and tailor the system to the task.

Continued active mission and combat proven

NASAMS has been protecting Washington DC 24/7 since 2005 demonstrating extreme reliability and with very high availability.

NASAMS is designed for operations in arctic, subtropic and desert conditions.

Since 2022 NASAMS has been deployed to Ukraine, and has demonstrated its effectiveness with an extremely high kill rate.

Extreme Performance for Extreme Conditions

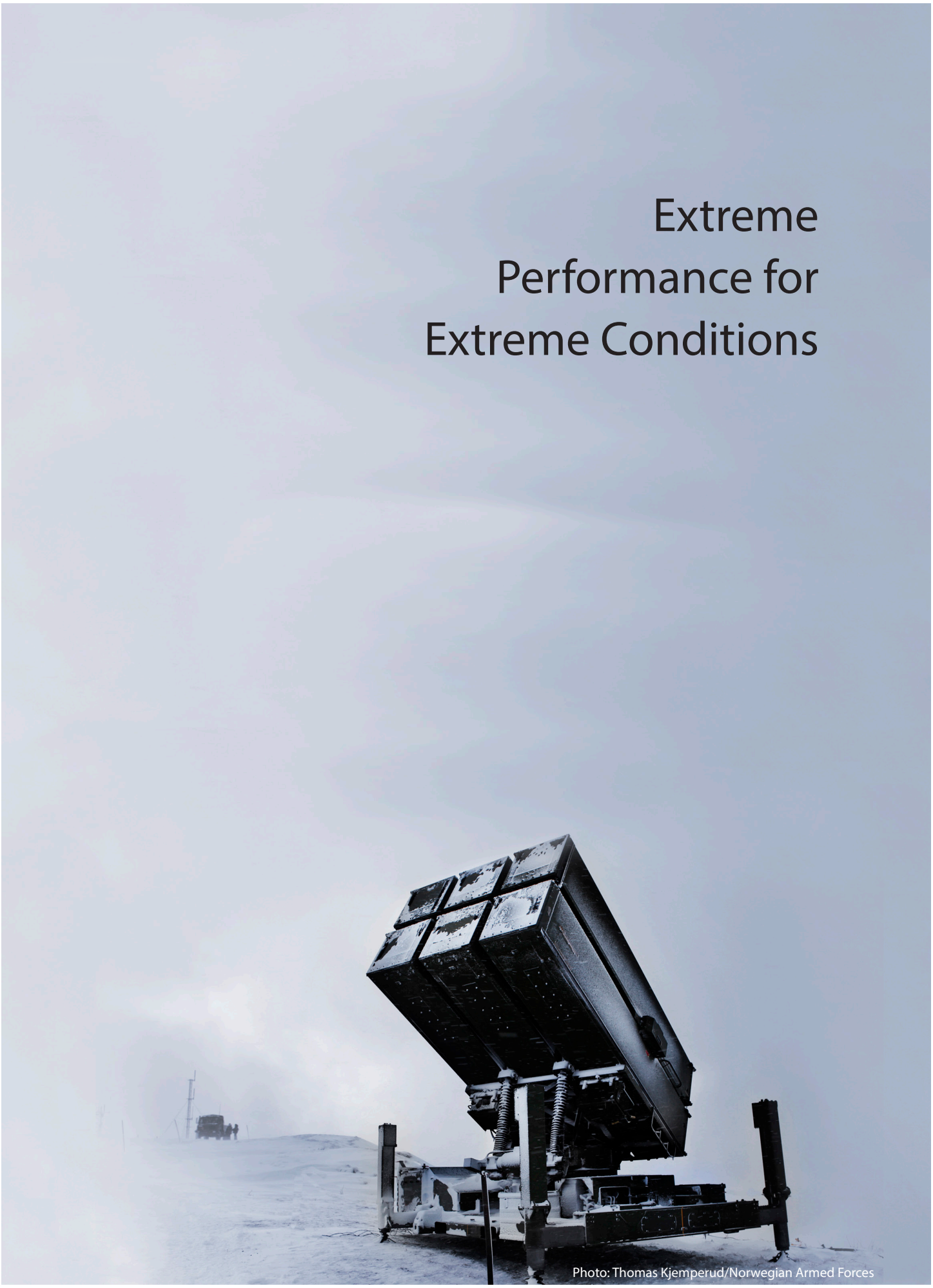
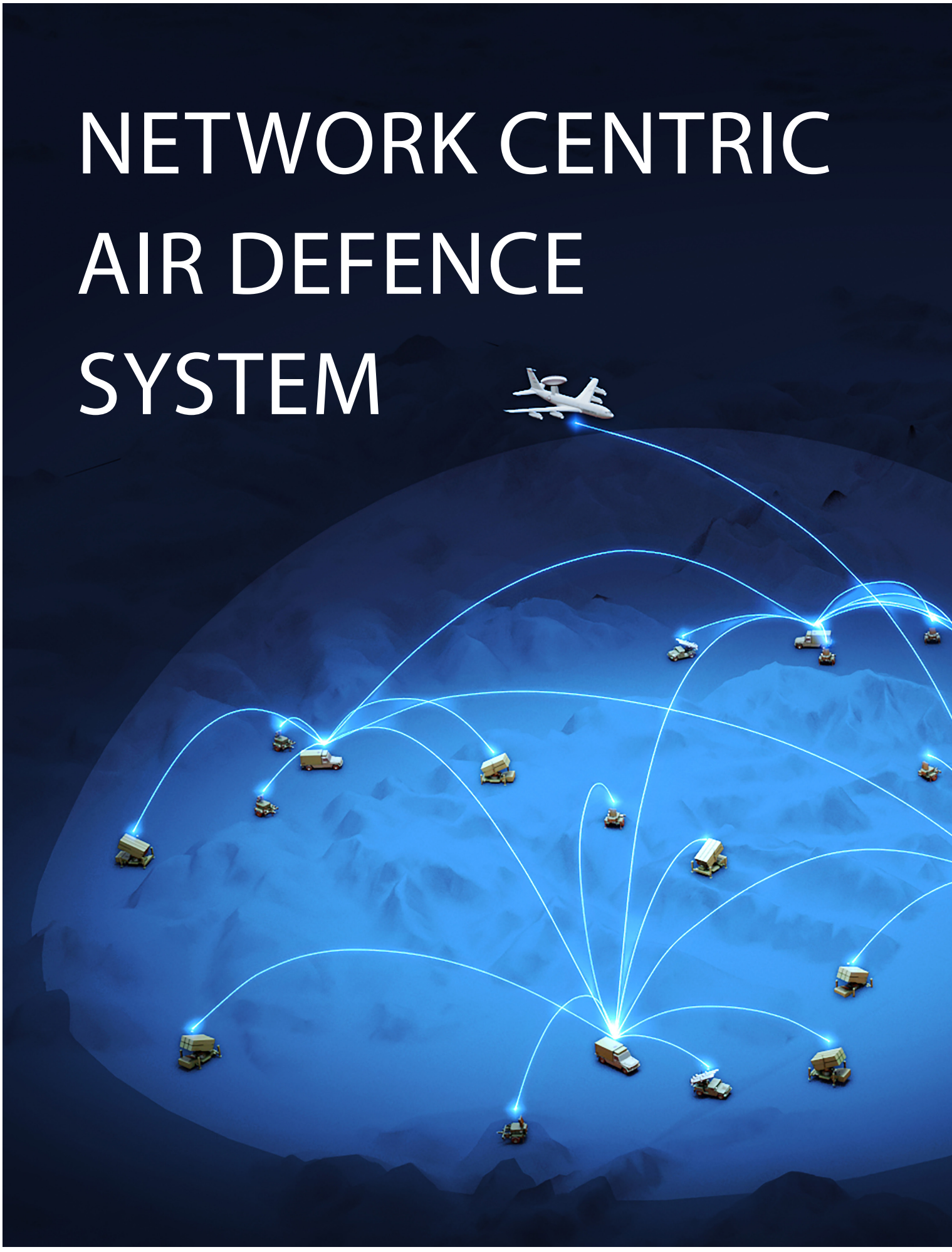


Photo: Thomas Kjemperud/Norwegian Armed Forces

NETWORK CENTRIC AIR DEFENCE SYSTEM



VALUE OF NASAMS

KONGSBERG/Raytheon offers a combat proven NASAMS system with capability to protect several areas and high-value assets separated by large distances.

Unprecedented fire power, mix of missiles, low manning requirements, redundancy and flexibility are typical NASAMS characteristics enabled by the relatively small and agile components comprising the system. The NASAMS' ability to protect static and mobile assets, opens for a range of roles and missions.

Dual use AMRAAM Missile

NASAMS employs Raytheon's AMRAAM and AIM-9X Block II missiles, identical to the missiles used on fighter aircraft. The dual-use concept has operational advantages and reduces logistics cost.

Defends a large geographical area

The radar and launcher elements can be deployed over a large area separated by more than 20 kilometres from the FDC, providing an extended coverage with few elements. Dispersed elements increase its survivability against enemy air and ground attacks.

EVOLUTION

NASAMS is on a path of continuous evolution.

NASAMS is designed to evolve with the development of the threat and can insert new technology and capability when available. This can be future active or passive radars and sensors, Sense & Warn capability, and a wide range of effectors (e.g. longer and shorter range missiles, CUAS, etc.). The evolution is enabled by the open architecture in the FDC.

The FDC is a true Multi Domain Command & Control component and can, pending on desired configuration, support a wide range of missions; GBAD C2 and fire control, cruise missile defence, Army counter fire operations, coastal defence, air surveillance, airspace management and others.

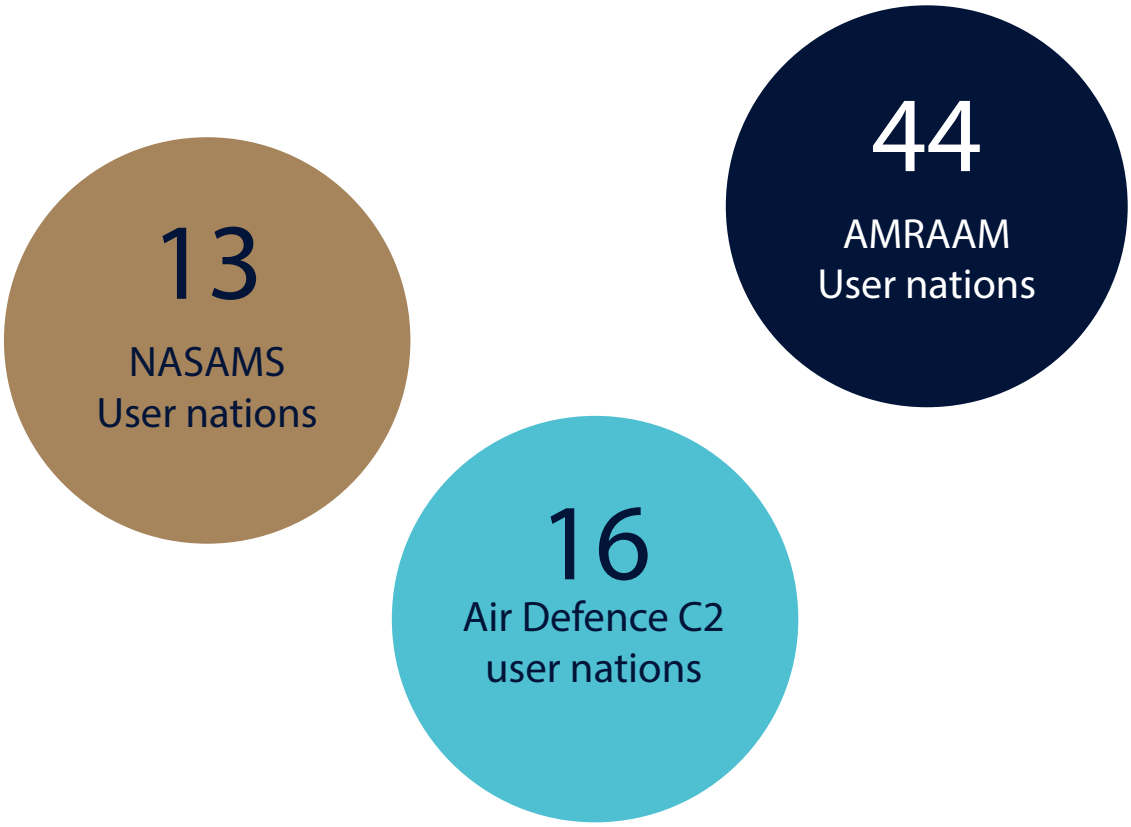
The NASAMS architecture can grow into a Full Spectrum Air Defence System.

AN INTERNATIONAL SYSTEM

The KONGSBERG FDC C2 and networking technology are selected by several nations globally. Experience and practical knowledge from these programs are embedded in NASAMS and ensures proven interoperability with a nation's higher echelon and allied NATO/EU forces.

NASAMS is in operational use in Norway, Spain, USA, the Netherlands, Finland, Oman, Lithuania, Indonesia, Australia, Qatar, Hungary, Ukraine and one undisclosed customer. The system is in production for several other nations. NASAMS is in use with both Armies and Air Forces around the world. In addition Poland, Greece and Turkey operate the KONGSBERG Command and Control solution for various weapon systems.

NASAMS FEATURES	
Status of NASAMS	In operational use with 13 nations. In production
NASAMS Tests & Tactical firings	1100+ (> 92 % success)
AMRAAM and AIM-9X-2 Dual use (without any modification)	Fighter Aircraft and NASAMS
AMRAAM Combat kills	> 950
Target sets	UAVs, Helicopters, Cruise Missiles, UCAVs, Aircraft
NASAMS Architecture	Open SW & HW architecture, COTS, Network Centric
Simultaneous multiple engagements	72
Mission of Reference	> 140 000 hours demonstrated. Ccontinuous operations (24/7), ongoing mission. Combat proven in Ukraine
Transportability	Air (C-130 and helicopter), Sea and Land
Data links (implemented and in use)	Link 16, JRE, Link 11, Link 11B, LLAPI, ATDL-1, indigenous ++
Mission Planning Tool	Embedded and stand alone (PC/laptop)



KONGSBERG

KONGSBERG DEFENCE & AEROSPACE AS
Kirkegaardsveien 45
PO Box 1003
N-3601 Kongsberg
Norway

+47 32 28 82 00
office.kda@kongsberg.com